



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,075	12/31/2003	Louis Lippincott	ITL.1703US (P17498)	2083
21906 7590 01/19/2011 TROP, PRUNER & HU, P.C. 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631			EXAMINER ANYIKIRE, CHIKAODILI E	
			ART UNIT 2482	PAPER NUMBER
			MAIL DATE 01/19/2011	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/750,075	Applicant(s) LIPPINCOTT ET AL.	
	Examiner CHIKAODILI E. ANYIKIRE	Art Unit 2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-17, and 23-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-17 and 23-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application is responsive to application number (10/750075) filed on December 31, 2003. Claims 1-3, 5-17, and 23-26 are pending and have been examined.

Response to Arguments

2. Applicant's arguments filed November 15, 2010 have been fully considered but they are not persuasive. The applicant argues that Lin does not teach "adding an offset value to said reference macroblock's uncompressed video data value and said search window macroblock's uncompressed video data value (page 7 lines 17-24). The examiner disagrees. Lin discloses how values of the reference and search window macroblock are summed together when the desire to have a fuller resolution for the image is required (column 8 lines 39 - 50).

Claim Objections

3. Claims 12 objected to because of the following informalities: Claim 12 depends on a now cancelled claim 11. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2482

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 26 rejected under 35 U.S.C. 102(b) as being anticipated by Lin (US 6,421,466).

As per **claim 1**, Lin discloses a method, comprising:

determining a sum of absolute differences between pixels values from a reference block a first frame and a corresponding values from a second frame in a search window (column 5 lines 45 -50 and column 6 lines 52-55);

identifying a macroblock in the second frame with the lowest sum of absolute differences (column 7 lines 7-9); and

using less than all the bits of the pixels values to determine the sum of absolute differences to reduce the size of the circuitry needed to perform the sum of absolute differences determination (column 5 lines 45 – 50 and column 5 lines 65 - column 6 lines 3).

Regarding **claim 26**, arguments are analogous to those presented for claim 1 in are applicable for claim 26.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2482

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 2-3, 5-7, 13-14, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (US 6,421,466) in view of Lam et al (US 6,888,943).

As per **claim 2**, Lin discloses the method of claim 23 wherein said first frame is a current frame (Fig 4, current pic) and said second frame is previous frame (Fig 4, Old pic; Col 5 Ln 45-50).

As per **claim 3**, Lin discloses the method of claim 23 further comprising loading said reference macro block's data values (Fig 4, 52) into a register (Fig 5, 92) prior to said taking (Col 7 Ln 19-31).

As per **claim 5**, Lin discloses the method of claim 3 further comprising loading said search window's data values (Fig 4, 42) into a random access memory prior to said taking the absolute difference (Col 7 Ln 19-31).

As per **claim 6**, as best understood by the examiner, Lin discloses the method of claim 5 wherein said reference macroblock's data values (Fig 4, 52) are uncompressed when said loaded and said search window's data values are uncompressed when loaded (Fig 6, Col 7 Ln 40-51).

As per **claim 7**, as best understood by the examiner, Lin discloses the method of claim 1 further comprising determining which N bits from:

1) said reference macroblock's data value's M bits (Fig 4, 52; Col 8 Ln 15-23; data value has been considered to be an 8-bit pixel value)

2) said search window macro block's data value's M bits (Fig 4, 42) are to be used for said taking the absolute difference (Col 8 Ln 15-23; the prior art discloses M=8 bits having been reduced to N=6 bits for the absolute difference calculation).

Regarding **claim 13**, arguments analogous to those presented for claim 1 are applicable for claim 13.

Regarding **claim 14**, arguments analogous to those presented for claim 2 are applicable for claim 14.

Regarding **claim 15**, arguments analogous to those presented for claim 11 are applicable for claim 15.

Regarding **claim 16**, arguments analogous to those presented for claim 11 are applicable for claim 16.

Regarding **claim 17**, arguments analogous to those presented for claim 8 are applicable for claim 17.

As per **claim 23**, Lin discloses a method, comprising:

a) taking the absolute difference of:

1) less than all of the bits of an uncompressed video data value from a reference macro block (Fig 4, 52);

2) less than all of the bits of an uncompressed video data value from a macro block worth of data within a search window (Fig 4, 42; Col 5 Ln 45-50);

b) calculating a sum of absolute differences between corresponding data values within said reference macro block (Fig 4, 52) and said macro block worth of data (Fig 4, 42), said absolute difference being one of said absolute differences (Col 6 Ln 60 – Col 7 Ln 7); and

c) calculating a motion vector based upon the position of said reference macro block (Fig 4, 52) in a first frame and the position of said macro block worth of data (Fig 4, 42) in said second frame, said sum of absolute differences being a lowest sum of absolute amongst other sums of absolute differences calculated between said reference macro block (Fig 4, 52) and other macro blocks worth of data (Fig 4, 42) within said search window (Col 7 Ln 1-17).

As per **claim 24**, Lin discloses an apparatus, comprising:

a) logic circuitry to take an absolute difference between:

1) less than all of the bits of an uncompressed video data value from a reference macro block (Fig 4, 52);

2) less than all of the bits of an uncompressed video data value from a macro block worth of data within a search window (Fig 4, 42; Col 5, Ln 35-50);

c) a register (Fig 5, 92) to store said reference macro block (Fig 4, 52), said register coupled to said logic circuitry (Fig 7, Ln 19-31); and

d) a random access memory to store said search window said random access memory (Fig 5, 92) coupled to said logic circuitry (Col 7 Ln 19-31).

As per **claim 25**, Lin discloses the method of claim 1, including: taking an absolute difference between data values of macroblocks (column 6 lines 52-55).

However, Lin does not explicitly teach including:

taking an absolute difference between data values of macroblocks by masking a number of most significant bits of said data values; and

calculating the number of most significant bits to mask.

In the same field of endeavor, Lam teaches by masking a number of most significant bits of data values; and calculating the number of most significant bits to mask (Fig 5 element 535; column 7 lines 32-37; The prior art covers the mask generator

and covers the masking of the bits and suggests the calculating of the most significant bits.).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of Lin in view of Lam. The advantage would be providing multimedia at a desired quality level (see abstract).

9. Claims 8, 9, 11, 12, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (US 6,421,466) in view of Lam et al (US 6,888,943) in further view of Pourreza et al ("Weighed Multiple Bit-Plane Matching, A Simple and Efficient Matching Criterion for Electronic Digital Image Stabilizer Application).

As per **claims 8 and 17**, Lin discloses the method of claims 8 and 17, wherein said determining comprises:

determining the number of most significant bits that are to be masked from both said data values (Col 8 Ln 15-18);

Lin does not disclose determining the number of least significant bits that are to be masked from both said data values.

In the same field of endeavor, Pourreza et al teaches reducing the complexity of block matching criterion by truncating different combination of the bits of 8-bit pixels that includes masking a number of most significant bits or less significant bits accomplished on SSD, SAD, MPDC, BPROP, sub-sampled BPROP or BPROPS (4 to 1 sub-

sampling), Ko method (by using $b_1b_2b_3b_4$, $b_2b_3b_4b_5$, $b_3b_4b_5b_6$ and $b_4b_5b_6b_7$ bits) matching criteria(Fig 3 Section 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to integrate the method of Lin with the method of Pourreza et al. The advantage of the integration is that it will reduce the complexity of block matching process and has the best performance than other 1 bit-per-pixel algorithms (Pourreza, Section 5).

As per **claim 9**, as best understood by the Examiner, Lin discloses the method of claim 8 wherein said determining the number of least significant bits is (N-M)-(said determined number of most significant bits) (Col 8 Ln 15-23; the prior art teaches selecting 6 bits as the most significant bits, which represents using N=6 bits from 8-bit pixels, and therefore the leftover bits will represent the least significant bits).

As per **claims 11, 15, and 16**, Lin disclose the method and apparatus of claims 9, further comprising adding an offset value to said reference macro block's uncompressed video data value and said search window macro block's uncompressed video data value (Col 3 Ln 51-65, generating images with reduced_width level pixel data will add an offset to the pixel values and change the optical resolution of the reference and search window macroblocks).

As per **claims 12**, Lin discloses the method of claim 11 wherein said offset is set equal to a minimum valued uncompressed video data value of said reference macro

block (Col 3 Ln 51- Col 4 Ln 14; the prior art discloses reducing pixel values to a reduced_width level 4 image, which is the minimum and is used as an offset).

Allowable Subject Matter

1. Claim 10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is

Art Unit: 2482

(571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2482
/Chikaodili E Anyikire/
Examiner, Art Unit 2482